Introduction to Excel II

Mathematics 505d

June 10, 2011

1. The life span in days of 88 wildtype and 99 transgenic mosquitoes is given on the sheet called mosquitoes

   (a) Use the MIN, QUARTILE, MEDIAN and MAX command to create a five number summary for each column.
   
   (b) Use this to make side by side boxplots of the life span of the two mosquito genotypes.
   
   (c) Type the numbers from 1 to 12 in cells D2 to D13.
   
   (d) Type bins in cell E1 and make a arithmetic sequence from 0 to 55 in cells E2 to E13.
   
   (e) Type =INDEX(FREQUENCY($A$2:$A$89,$E$2:$E$13),D2) in cell F2.
   
   (f) Fill down to F13.
   
   (g) Type =INDEX(FREQUENCY($B$2:$B$89,$E$2:$E$13),D2) in cell G2.
   
   (h) Fill down to G13.
   
   (i) Place a quote mark in cell E14. This forces column E to be considered as a category and not a number.
   
   (j) Make clustered column histograms for the two genotypes

2. The temperature and the number of chirps of a cricket per second is given on the sheet chirps.

   (a) Make a scatterplot of the data.
   
   (b) Pick a cell below the data and enter =INDEX(LINEST(B3:B17,A3:A17),1). This gives the slope of the regression line.
   
   (c) Pick a second cell below the data and enter =INDEX(LINEST(B3:B17,A3:A17),2). This gives the intercept of the regression line.
   
   (d) Use the line to predict the temperatures in cells E3 to E10.

3. The batting average and the number of runs score in 2010 for every American League team in Major League Baseball is given on the sheet mlb. Our goal is to see the extent that batting average predicts runs scored.

   (a) Make a scatterplot of the data.
   
   (b) Find the slope and the intercept of the regression line that predict runs per game scored based on batting average.
(c) Find the residuals for each team and use that to determine which teams most overproduced and which teams most underproduced.

4. Global warming has many indirect effects on climate. For example, summer monsoon winds in the Arabian Sea bring rain to India needed for agriculture. As the climate warms and winter snow cover in Europe and Asia decreases, the land heats up more rapidly in summer which may increase the strength of the monsoon. The data in sheet climate are snow cover (in millions of square kilometers) and stress (in newtons per square meter).

(a) Find the mean of the snowcover and the windstress
(b) In columns C and D find the value of the data minus the mean.
(c) Square these values and place them in columns E and F.
(d) Find the sums in in columns E and F.
(e) Divide by 20 to find the variances.
(f) Take the square roots to find the standard deviations.
(g) Take the product of the values In columns C and D and enter the values in column G.
(h) Find the sums in in column G.
(i) Divide by 20 to find the covariance.